



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/542,447	07/15/2005	Yoshihiro Taniguchi	63678 (70904)	5117
21874	7590	09/15/2008	EXAMINER	
EDWARDS ANGELL PALMER & DODGE LLP			TOLEDO, FERNANDO L.	
P.O. BOX 55874			ART UNIT	PAPER NUMBER
BOSTON, MA 02205			2895	
MAIL DATE		DELIVERY MODE		
09/15/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/542,447	Applicant(s) TANIGUCHI ET AL.
	Examiner Fernando L. Toledo	Art Unit 2895

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-14 is/are pending in the application.
 - 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) Claim(s) ____ is/are allowed.
- 6) Claim(s) 1-14 is/are rejected.
- 7) Claim(s) ____ is/are objected to.
- 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on ____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-154(e))
Paper No(s)/Mail Date 20050715 & 20051117.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) Notice of Informal Patent Application
- 6) Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless —

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1 – 4 and 7 – 14 are rejected under 35 U.S.C. 102 (a) as being anticipated by Okumura et al. (U. S. Patent 6,372,039 B1).

3. In re claim 1, Okumura discloses, in the U. S. Patent 6,372,039 B1; figures 1A - 10 and related text, the step of irradiating a main energy beam and a sub energy beam, whose energy per unit area is smaller than that of the main energy beam and lower than an energy threshold at which a semiconductor thin film fuses, to the semiconductor thin film formed on a substrate, so as to fuse the semiconductor thin film over a whole area in a thickness direction and crystallize the semiconductor thin film, wherein the sub energy beam is irradiated so as to adjoin the main energy beam (columns 9 and 10, lines 42 – 67 and 1 - 5, respectively).

4. In re claim 2, Okumura discloses, wherein there is performed pulse irradiation of the main energy beam and/or the sub energy beam to the semiconductor thin film (column 9, lines 42 – 67).

5. In re claim 3, Okumura discloses, wherein irradiation of the main energy beam is started at a time when energy per unit area with which the sub energy beam is irradiated to a surface of the semiconductor thin film reaches a maximum (column 10, lines 1 – 5).

6. In re claim 4, Okumura discloses, wherein the main energy beam and the sub energy beam are irradiated so as to be different from each other in terms of a wavelength (column 7, lines 35 - 45).

7. In re claim 7, Okumura discloses an energy beam irradiating means for performing pulse irradiation so that a main energy beam and a sub energy beam, whose energy per unit area is smaller than that of the main energy beam and lower than an energy threshold at which a semiconductor thin film fuses, are irradiated to a semiconductor thin film formed on a substrate, wherein the energy beam irradiating means irradiates the sub energy beam so that the sub energy beam adjoins the main energy beam (Figure 9).

8. In re claim 8, Okumura discloses wherein the energy beam irradiating means includes (i) a mask for forming patterns of the main energy beam and the sub energy beam irradiated to the semiconductor thin film and (ii) an imaging lens for imaging said main energy beam and sub energy beam, which have penetrated said mask, on the semiconductor thin film, and the mask forms a pattern of the main energy beam and a pattern of the sub energy beam adjoining the pattern of the main energy beam (Figure 7).

9. In re claim 9, Okumura discloses wherein the energy beam irradiating means performs pulse irradiation of the main energy beam and/or the sub energy beam (Title).

10. In re claim 10, Okumura discloses wherein the energy beam irradiating means irradiates a laser light (Title).

11. In re claim 11, Okumura discloses a first beam irradiating section for irradiating a main energy beam (Figure 9); a first mask for forming a pattern of the main energy beam irradiated by the first beam irradiating section (Figure 7); a second beam irradiating section for irradiating a

sub energy beam whose energy per unit area is smaller than that of the main energy beam and lower than an energy threshold at which a crystallized semiconductor thin film fuses (Figure 9); a second mask for forming a pattern of the sub energy beam irradiated by the second beam irradiating section (Figure 7); and an imaging lens for imaging patterns, respectively formed by the first mask and the second mask, on a semiconductor thin film, wherein the first mask and the second mask form patterns by which the sub energy beam is irradiated to the semiconductor thin film so as to adjoin the main energy beam (Figures 7 and 9).

12. In re claim 12, Okumura discloses comprising: controlling means for controlling a timing at which the main energy beam is irradiated by the first beam irradiating section and a timing at which the sub energy beam is irradiated by the second beam irradiating section (Figure 9); and adjusting means for respectively adjusting energy per unit area with which the main energy beam is irradiated by the first beam irradiating section and energy per unit area with which the sub energy beam is irradiated by the second beam irradiating section (Figure 9).

13. In re claim 13, Okumura discloses wherein the first beam irradiating section and the second beam irradiating section irradiate energy beams different from each other in terms of a wavelength (column 7, lines 35 – 45).

14. In re claim 14, Okumura discloses wherein the first beam irradiating section and/or the second beam irradiating section perform pulse irradiation of energy beams (Figure 9).

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okumura as applied to claim 1 above.

17. In re claim 5, Okumura discloses different wavelengths for the two different laser beams as shown in column 7, lines 35 - 45. However, Okumura does not disclose that the wavelength of the first laser beam is 532 nm and the wavelength of the second laser beam is 308 nm.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the wavelength of the first laser beam of Okumura at 532 nm and the wavelength of the second laser beam of Okumura at 308 nm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Note that the specification contains no disclosure of either the critical nature of the claimed wavelengths or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen wavelengths or upon another variable recited in a claim, the Applicant must show that the chosen wavelengths are critical. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990). In addition, the selection of wavelengths, is obvious because it is a matter of determining optimum process conditions by routine experimentation with a limited number of species of result effective variables. These claims are *prima facie* obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. *In re Woodruff*, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also *In re Huang*, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996)(claimed ranges or a result effective variable, which do not overlap the prior art ranges, are

unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also *In re Boesch*, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill or art) and *In re Aller*, 105 USPQ 233 (CCPA 1995) (selection of optimum ranges within prior art general conditions is obvious).

18. In re claim 6, Okumura discloses a silicon dioxide layer as the insulator layer as shown in column 15, lines 50 - 55. However, Okumura is silent in the use of silicon nitride, aluminum nitride, aluminum oxide, magnesium oxide, and cerium oxide.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have silicon nitride, aluminum nitride, aluminum oxide, magnesium oxide, or cerium oxide instead of silicon oxide as taught by Okumura, since it has been held to be within the general skill of a worker in the art to select a known material on the base of its suitability, for its intended use involves only ordinary skill in the art. *In re Leshin*, 125 USPQ 416.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fernando L. Toledo whose telephone number is 571-272-1867. The examiner can normally be reached on Mon-Fri 8am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Richards can be reached on 571-272-1736. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Fernando L. Toledo/
Primary Examiner, Art Unit 2895

flt
11 September 2008